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BIOLOGICAL BULLETIN

I. TRUSTEES

AUGUST, 1909

EX OFFICIO

F. R. LILLIE, *Director*, University of Chicago.

GILMAN A. DREW, *Assistant Director*, University of Maine.

D. BLAKELY HOAR, *Treasurer*, 161 Devonshire Street, Boston, Mass.

THOS. H. MONTGOMERY, JR., *Clerk of the Corporation*, University of Pennsylvania.

TO SERVE UNTIL 1913

NATHANIEL L. BRITTON..2965 Decatur Avenue, Bronx, New York City.

S. F. CLARKEWilliams College, Williamstown, Mass.

CHARLES COOLIDGE.....Ames Building, Boston, Mass.

C. R. CRANE.....2559 Michigan Boulevard, Chicago, Ill.,
President of the Board.

ALFRED G. MAYER.....Carnegie Institution, Washington, D. C.

T. H. MORGAN.....Columbia University.

ERWIN F. SMITH.....United States Department of Agriculture,
Washington, D. C.

E. B. WILSON.....Columbia University.

TO SERVE UNTIL 1912

M. J. GREENMAN.....Wistar Institute of Anatomy and Biology,
Philadelphia.

C. W. HARGITT.....Syracuse University.

C. A. HERTER.....University and Bellevue Medical School,
New York City.

H. S. JENNINGS.....Johns Hopkins University.

GEORGE LEFEVRE.....University of Missouri.

WILLIAM LIBBEY.....Princeton University.

A. P. MATHEWS.....University of Chicago.

G. H. PARKER.....Harvard University.

TO SERVE UNTIL 1911

- H. C. BUMPUS.....American Museum of Natural History,
New York City.
W. A. LOCY.....Northwestern University, Evanston, Ill.
JACQUES LOEB.....University of California, Berkeley, Calif.
F. P. MALL.....Johns Hopkins University.
GEORGE T. MOORE.....Washington University, St. Louis.
L. L. NUNN.....Telluride, Colo.
JOHN C. PHILLIPS.....299 Berkeley Street, Boston, Mass.
C. O. WHITMAN.....University of Chicago.

TO SERVE UNTIL 1910

- E. G. CONKLIN.....Princeton University.
ROSS G. HARRISON.....Yale University.
CAMILLUS G. KIDDER....27 William Street, New York City.
M. M. METCALF.....Oberlin College, Oberlin, Ohio.
WILLIAM PATTEN.....Dartmouth College, Hanover, New Hamp-
shire.
D. P. PENHALLOW.....McGill University, Montreal, Canada.
JACOB REIGHARD.....University of Michigan, Ann Arbor, Mich.
W. B. SCOTT.....Princeton University.

II. ACT OF INCORPORATION

No. 3170.

COMMONWEALTH OF MASSACHUSETTS

Be It Known, That whereas Alpheus Hyatt, William Sanford Stevens, William T. Sedgwick, Edward G. Gardiner, Susan Minns, Charles Sedgwick Minot, Samuel Wells, William G. Farlow, Anna D. Phillips and B. H. Van Vleck have associated themselves with the intention of forming a Corporation under the name of the Marine Biological Laboratory, for the purpose of establishing and maintaining a laboratory or station for scientific study and investigation, and a school for instruction in biology and natural history, and have complied with the provisions of the statutes of this Commonwealth in such case made and provided, as appears from the certificate of the President, Treasurer, and Trustees of said Corporation, duly approved by the Commissioner of Corporations, and recorded in this office;

Now, therefore, I, HENRY B. PIERCE, Secretary of the Commonwealth of Massachusetts, *do hereby certify* that said A. Hyatt, W. S. Stevens, W. T. Sedgwick, E. G. Gardiner, S. Minns, C. S. Minot, S. Wells, W. G. Farlow, A. D. Phillips, and B. H. Van Vleck, their associates and successors, are legally organized and established as, and are hereby made, an existing Corporation, under the name of the MARINE BIOLOGICAL LABORATORY, with the powers, rights, and privileges, and subject to the limitations, duties, and restrictions, which by law appertain thereto.

Witness my official signature hereunto subscribed, and the seal of the Commonwealth of Massachusetts hereunto affixed, this twentieth day of March, in the year of our Lord ONE THOUSAND, EIGHT HUNDRED AND EIGHTY-EIGHT.

HENRY B. PIERCE,
Secretary of the Commonwealth.

[SEAL.]

III. BY-LAWS OF THE CORPORATION OF THE MARINE BIOLOGICAL LABORATORY

I. The annual meeting of the members shall be held on the second Tuesday in August, at the Laboratory, in Woods Hole, Mass., at 12 o'clock noon, in each year, and at such meeting the members shall choose by ballot a Treasurer and a Clerk, who shall be, *ex officio*, members of the Board of Trustees, and Trustees as hereinafter provided. At the annual meeting to be held in 1897, not more than twenty-four Trustees shall be chosen, who shall be divided into four classes, to serve one, two, three, and four years, respectively, and thereafter not more than eight Trustees shall be chosen annually for the term of four years. These officers shall hold their respective offices until others are chosen and qualified in their stead. The Director and Assistant Director, who shall be chosen by the Trustees, shall also be Trustees, *ex officio*.

II. Special meetings of the members may be called by the Trustees, to be held in Boston or in Woods Hole at such time and place as may be designated.

III. The Clerk shall give notice of meetings of the members by publication in some daily newspaper published in Boston at least fifteen days before such meeting, and in case of a special meeting the notice shall state the purpose for which it is called.

IV. Twenty-five members shall constitute a quorum at any meeting.

V. The Trustees shall have the control and management of the affairs of the Corporation; they shall present a report of its condition at every annual meeting; they shall elect one of their number President and may choose such other officers and agents as they may think best; they may fix the compensation and define the duties of all the officers and agents; and may remove them, or any of them, except those chosen by the members, at any time; they may fill vacancies occurring in any manner in their own number or in any of the offices. They shall from time to time elect members to the Corporation upon such terms and conditions as they may think best.

VI. Meetings of the Trustees shall be called by the President, or by any two Trustees, and the Secretary shall give notice thereof by

written or printed notice sent to each Trustee by mail, postpaid. Seven Trustees shall constitute a quorum for the transaction of business. The Board of Trustees shall have power to choose an Executive Committee from their own number, and to delegate to such Committee such of their own powers as they may deem expedient.

VII. The President shall annually appoint two Trustees, who shall constitute a committee on finance, to examine from time to time the books and accounts of the Treasurer, and to audit his accounts at the close of the year. No investments of the funds of the Corporation shall be made by the Treasurer except approved by the finance committee in writing.

VIII. The consent of every Trustee shall be necessary to a dissolution of the Marine Biological Laboratory. In case of dissolution, the property shall be given to the Boston Society of Natural History, or some similar public institution, on such terms as may then be agreed upon.

IX. These By-Laws may be altered at any meeting of the Trustees, provided that the notice of such meeting shall state that an alteration of the By-Laws will be acted upon.

X. Any member in good standing may vote at any meeting, either in person or by proxy duly executed.

IV. REPORT OF THE TRUSTEES

In making their last annual report the trustees had to announce, with deep regret, the retirement of Professor Whitman from the directorship of the laboratory. As was stated in that report, Professor Whitman was succeeded, in August, 1909, by Professor Frank R. Lillie, whose annual report is submitted herewith. At the same time Professor Gilman A. Drew was appointed to succeed Professor Lillie as Assistant Director. The trustees desire to express their satisfaction that the high ideals of work and the spirit of coöperative endeavor, which the laboratory has so long striven to uphold, have been fully maintained, and that the institution has every reason to look hopefully to the future.

The trustees announce with much pleasure that the plans looking towards the construction of a new and permanent laboratory building have in the past year made substantial progress. At the Baltimore meeting, in December, 1908, was announced a gift from the President of the Board of Trustees, Mr. Charles R. Crane, for the purchase of additional land at Woods Hole with a view to the future erection of such a laboratory building. With the approval of the donor, the fund thus acquired was used for the purchase of the tract known as the "Kidder lot," lying between the stone building and the street on which the original laboratory building faces. At the August meeting in 1909 Mr. Coolidge offered to prepare a tentative plan for a permanent fire-proof building, to be erected on this site, and a committee of the trustees was appointed to secure suggestions and details incident to the preparation of this plan, and to coöperate with the Corporation committee on building. At the Boston meeting, in December, 1909, a new committee was appointed to carry on this work, and it is hoped that during the present year the plans may take definite shape.

The time has come when the laboratory should be provided with a building or buildings commensurate with the extent and

importance of the work in which it is engaged, and which will not suffer by comparison with the laboratories of other institutions of similar aim. The steady expansion of our work in past years has from time to time made imperative the construction of new buildings; and that these have fulfilled their purpose is abundantly demonstrated by the work that has been done in them. Owing to financial limitations, however, most of these buildings were of a flimsy and temporary character, sometimes erected in haste to meet an immediate and pressing need; and they are not only in themselves imperfectly adapted to their purpose but have often called forth expressions of astonishment from foreign and other visitors that so much could have been accomplished with accommodations so primitive. The cramped and often noisy working quarters, the unsteady foundations, imperfect equipment and inflammable nature of these buildings impress every worker and visitor at the laboratory; and nothing is plainer than the need of a substantial, well equipped, safe and dignified new laboratory to form the principal center of the work at Woods Hole. The acquisition of a suitable site for this purpose is an important forward step, and the generous offer of Mr. Coolidge places the project before us in concrete form. It is the earnest hope of the trustees that the means may soon be found for carrying out the plans that are now being formulated; and it is their belief that when this has been done the laboratory will enter upon a new period of development that contains great possibilities of usefulness.

V. TREASURER'S REPORT

FOR THE YEAR ENDING DECEMBER 31, 1909

INCOME

Annual dues	\$	666.00	
Donations		17,240.00	
Miscellaneous:			
Interest on deposits.....	\$44.40		
Bath house.....	78.45		
Mess (net).....	26.74		
Rent of microscopes.....	49.00		
Sundries	6.85	205.44	
Supply Department		8,549.55	
Tuitions		<u>3,708.35</u>	\$30,369.34

EXPENSES

Administration	\$	900.00	
Advertising		80.72	
Biological Bulletin (net).....		1,094.69	
Boats and launch.....		1,595.92	
Chemicals, chemist supplies, etc.		659.32	
Fish trap (net).....		113.16	
Instructors' salaries		2,725.00	
Insurance		98.78	
Interest		150.00	
Labor		3,566.58	
Periodicals and library supplies.....		868.39	
Postage		79.24	
Real estate		7,600.00	
Repairs		1,011.21	
Sundries		2,262.09	
Supply department		<u>6,380.69</u>	\$29,185.79
Surplus			\$ 1,183.55

ITEMIZED LIST OF SUNDRY EXPENSES FOR THE YEAR 1909

Announcements	\$ 69.00	
Care of cemetery lot.....	2.00	
Cleaning	35.00	
Crash	50.45	
Dr. Drew's expenses.....	157.49	
Dr. Lillie's expenses.....	371.35	
Engrossing Woods Hole greetings.....	20.00	
Exchange on checks.....	32.68	
Expenses W. C. Curtis.....	44.85	
Expenses purchase of land at Woods Hole...	10.31	
Express	158.95	
Gardener	4.70	
Sundry supplies	169.06	
Hubbard, J. G., services.....	60.00	
Instruments, laboratory supplies.....	131.15	
Lamps	13.85	
Laundry	17.29	
Lecture expense	25.00	
Plowing	3.00	
Premium on bond.....	7.50	
Rent of microscopes.....	44.16	
Rent of typewriter.....	11.50	
Stationary, office supplies.....	129.40	
Sundries	32.43	
Teaming and livery.....	14.00	
Telephone	61.97	
Treasurer's office, clerical services.....	520.00	
Water	65.00	\$2,262.09

MARINE BIOLOGICAL LABORATORY INVESTMENTS

JANUARY 1, 1910

RESERVE FUND

Amount of fund December 1, 1899.....	\$4,553.14	
Received from life memberships	600.00	
Income to January 1, 1910.....	1,898.15	
Gain from sale of securities.....	372.20	
	<u>7,423.49</u>	
Paid for current expenses of laboratory.....	6,000.00	\$1,423.49
Reserve fund now consists of the following:		
\$3000 Am. Tel. & Tel. Co. 4s, cost.....	2,921.25	
6 shs. Am. Smelting & Refining Co. pfd....	732.00	
Cash	<u>770.24</u>	
	4,423.49	
The above stocks and bonds are held as collateral		
for loan of.....	<u>3,000.00</u>	1,423.49

LIBRARY FUND

Amount of fund December 1, 1899.....	866.15	
Income	626.47	
Gain from sale of securities.....	74.88	
Sale of rights.....	<u>.81</u>	1,568.31

Library Fund now consists of the following:

3 shs. Am. Tel. & Tel. Co., cost.....	383.25	
$\frac{4}{5}$ of \$1000 Am. Tel. & Tel. Co. 4s, cost....	779.00	
1 sh. Am. Smelting & Refining Co. Pfd., cost	122.00	
Cash	<u>284.06</u>	1,568.31

LUCRETIA CROCKER FUND

Amount of fund December 1, 1899.....	2,500.00	
Income after paying students' fees.....	488.91	
Sale of rights.....	<u>.94</u>	2,989.85

Lucretia Crocker Fund now consists of the following:

18 shs. Vermont & Mass. R. R. Co., cost....	2,416.50	
1 sh. West End St. Ry. Co., cost.....	83.00	
1 sh. Am. Tel. & Tel. Co., cost.....	127.75	
$\frac{1}{5}$ of \$1000 Am. Tel. & Tel. Co., 4s, cost.....	194.75	
Cash	<u>167.85</u>	2,989.85

REPORTS OF THE TREASURER, 1906 TO 1909

SUMMARY OF THE REPORTS OF THE TREASURER OF THE MARINE BIOLOGICAL LABORATORY JANUARY 1, 1907, TO JANUARY 1, 1910

RECEIPTS

Cash on hand January 1, 1907.....	\$	1.19	
Income for 1907.....		15,779.70	
Income for 1908.....		17,452.18	
Income for 1909.....		<u>30,369.34</u>	\$63,602.41

DISBURSEMENTS

Expenses for 1907.....	\$15,638.38	
Expenses for 1908.....	17,476.25	
Expenses for 1909.....	29,185.79	
Cash on hand December 27, 1909.....	<u>1,301.99</u>	\$63,602.41

VI. THE DIRECTOR'S REPORT

TO THE TRUSTEES OF THE MARINE BIOLOGICAL LABORATORY.

Gentlemen: I have the honor to submit herewith a report on the work of the twenty-second session of the Marine Biological Laboratory for the year 1909. The year has been a successful one as measured by the growth of all departments, by the genuine and hearty coöperation of naturalists and institutions, and by the increase in our resources. If any confirmation were needed of the necessity and value of the work of the Laboratory, this year has furnished it.

Trustees.—At the regular summer meeting of the corporation, the following new members were elected to the board of trustees: Nathaniel L. Britton, Director-in-Chief of the New York Botanical Garden, Alfred G. Mayer, Director of the Marine Laboratory of the Carnegie Institution, and George Lefevre, Professor of Zoölogy in the University of Missouri. The board is to be congratulated on the accession of these gentlemen to its membership, which is now complete, consisting of thirty-two regular members and four members *ex officio*.

Staff.—The staff of investigation and instruction in 1909 comprised twenty-seven members, representing seventeen universities and colleges. There was no change in heads of departments; but a new course was offered by Professor Edward G. Spaulding on "Philosophical Aspects of Biology and Allied Sciences," which aroused much interest. The members of the staff of investigation rendered their services free.

The work of organizing the library on a more effective basis received a great impetus owing to the efforts of the librarian, Dr. Knowler. It is becoming increasingly important that more funds should be devoted to the purchase of books. There is no question that the enlargement of our library will greatly strengthen our position with the scientific public.

Attendance.—The total attendance in 1909 was 129 as against 100 in 1908. Of this number 66 were investigators and 63 stu-

dents. The gain was divided almost equally between investigators and students, fourteen of the former and fifteen of the latter. The class of beginning investigators alone showed a gain of 10, 16 in 1909 as against 6 in 1908. This was one of the most encouraging features of the session. We should continue our efforts to increase the attendance of this class of workers, because it is one of the most important functions of our Laboratory to assist in the making of investigators; and because those who are to succeed us in the work of advancing our science and in the management of the Laboratory are represented by the younger investigators of to-day.

Subscribing Institutions.—The number of subscribing institutions was 19 in 1909 as against 17 in 1908; Princeton University, Oberlin College, and the University of Missouri were new, and we hope permanent, accessions. We are still, however, far from having reached the limit of growth in this respect and we may confidently expect new additions. A committee of the board is now engaged in correspondence with institutions on this subject.

Donations.—The president of the board has again provided for the deficit in running expenses. He has also presented the Laboratory with a large piece of land having 157 feet of frontage on the main street and more than twice that on East Street, which unites our two main holdings and forms an ideal site for the erection of future permanent buildings.

Supply Department.—The business of the Supply Department continues to grow in a satisfactory manner; it has been necessary to furnish Mr. Gray with two assistant collectors during the year instead of one as formerly, and a bookkeeper is also employed throughout the year, but the growth of the business has been more than sufficient to pay for the additional expense involved.

In conclusion, I wish to express my thanks to the board of trustees for their hearty support and to the members of the staff for their loyal coöperation in the work of the Laboratory.

There are appended as parts of this report (1) a list of the staff, (2) the names of subscribing institutions, (3) lists of investigators and students in attendance, (4) a comparative tabular view of attendance, (5) the evening lectures, (6) a list of members of the Corporation.

THE STAFF, 1909

F. R. LILLIE, DIRECTOR,

Professor of Embryology, University of Chicago.

GILMAN A. DREW, ASSISTANT DIRECTOR,

Profesor of Biology, University of Maine.

ZOÖLOGY

I. INVESTIGATION

Zoölogy and Embryology

- E. G. CONKLIN.....Professor of Zoölogy, Princeton University.
- GILMAN A. DREW.....Professor of Biology, University of Maine.
- ROSS G. HARRISON.....Professor of Comparative Anatomy, Yale University.
- GEORGE LEFEVRE.....Professor of Zoölogy, University of Missouri.
- WARREN H. LEWIS.....Associate Professor of Anatomy, Johns Hopkins University.
- FRANK R. LILLIE.....Professor of Embryology, University of Chicago.
- THOS. H. MONTGOMERY, JR. Professor of Zoölogy, University of Pennsylvania.
- E. B. WILSON.....Professor of Zoölogy, Columbia University.
(Absent in 1909.)

II. INSTRUCTION

- WINTERTON C. CURTIS...Professor of Zoölogy, University of Missouri.
- GIDEON S. DODDS.....Fellow in Zoölogy, University of Pennsylvania.
- A. S. PEARSE.....Instructor in Zoölogy, University of Michigan.
- JOHN W. SCOTT.....Westport High School, Kansas City.

HENRY J. SPENCER Assistant in Zoölogy, Columbia University.
 EDWARD E. WILDMAN.... Central High School, Philadelphia.

EMBRYOLOGY

I. INVESTIGATION. (See Zoölogy)

II. INSTRUCTION

GILMAN A. DREW..... Professor of Biology, University of Maine.
 LORANDE L. WOODRUFF... Assistant Professor of Biology, Yale University.
 WILLIAM E. KELLICOTT... Professor of Biology, Woman's College of Baltimore.
 ROBERT A. BUDINGTON... Associate Professor of Zoölogy, Oberlin College.

PHYSIOLOGY

I. INVESTIGATION

ALBERT P. MATHEWS.... Professor of Physiological Chemistry, University of Chicago.
 R. S. LILLIE..... Instructor in Comparative Physiology, University of Pennsylvania.

II. INSTRUCTION

H. H. NEWMAN..... Professor of Zoölogy, University of Texas.
 FRANK P. KNOWLTON.... Professor of Physiology, Syracuse University.
 F. H. PIKE..... Instructor in Physiology, University of Chicago.

PHILOSOPHICAL ASPECTS OF BIOLOGY AND ALLIED SCIENCES

LECTURES

EDWARD G. SPAULDING... Assistant Professor of Philosophy, Princeton University.

BOTANY

GEORGE T. MOORE..... Professor of Plant Physiology and Applied Botany, Washington University.
 HENRY KRAEMER..... Professor of Botany and Pharmacognosy, Philadelphia College of Pharmacy.
 M. B. THOMAS..... Professor of Botany, Wabash College.
 GEORGE R. LYMAN..... Assistant Professor of Botany, Dartmouth College.

LIBRARY

H. McE. KNOWER.....Associate in Anatomy, Johns Hopkins University, Librarian.

OLIVER S. STRONG.....Instructor in Anatomy, Columbia University, Chemist

G. M. GRAY.....Curator of Supply Department.

JACOB SCHRAMM.....Wabash College, Collector in Botany.

JOHN VEEDER.....Cockswain.

INVESTIGATORS

1909

OCCUPYING ROOMS

I. ZOÖLOGY

- ADDISON, W. H. F., University of Pennsylvania.
BECKWITH, CORA J., Instructor in Biology, Vassar College.
BENTLEY, MADISON, Assistant Professor of Psychology, Cornell University.
BUDINGTON, ROBERT A., Associate Professor of Zoölogy, Oberlin College.
CLARK, ELIOT R., Instructor in Anatomy, Johns Hopkins Medical School.
CONKLIN, E. G., Professor of Zoölogy, Princeton University.
CURTIS, W. C., Professor of Zoölogy, University of Missouri.
DODDS, GIDEON S., Fellow in Zoölogy, University of Pennsylvania.
DREW, GILMAN A., Professor of Biology, University of Maine.
GOLDFARB, A. J., Investigator, Columbia University.
GUDERNATSCH, J. F., Instructor in Embryology and Experimental Morphology,
Cornell University Medical School, New York City.
HARRISON, ROSS G., Bronson Professor of Comparative Anatomy, Yale University.
HARVEY, B. C. H., Assistant Professor of Anatomy, University of Chicago.
KELLICOTT, WILLIAM E., Professor of Biology, Woman's College, Baltimore.
KING, HELEN D., Assistant in Anatomy, Wistar Institute of Anatomy and
and Biology.
KIRKHAM, WILLIAM B., Instructor in Biology, Yale University.
KNOWER, H. McE., University of Toronto.
LEFEVRE, GEORGE, Professor of Zoölogy, University of Missouri.
LILLIE, FRANK R., Professor of Embryology, University of Chicago.
LEWIS, WARREN H., Associate Professor of Anatomy, Johns Hopkins University.
McDONOUGH, JAMES, Decatur Ill.
McGILL, CAROLINE, Instructor in Anatomy, University of Missouri.
MAYER, ALFRED G., Carnegie Institution, Washington, D. C.
MONTGOMERY, THOS. H., JR., Professor of Zoölogy, University of Pennsylvania.
MORGAN, T. H., Professor of Experimental Zoölogy, Columbia University.
MORRILL, C. V., Lecturer in Histology and Embryology, Syracuse University.
MURBACH, LOUIS, Central High School, Detroit, Mich.
PAYNE, FERNANDUS, University of Indiana.
PEARSE, A. S., Instructor in Zoölogy, University of Michigan.
QUACKENBUSH, L. S., Columbia University.
RICKETTS, H. T., Assistant Professor of Pathology, University of Chicago.
SCOTT, JOHN W., Westport High School, Kansas City, Mo.
SPENCER, HENRY J., Assistant in Zoölogy, Columbia University.
STOCKARD, CHARLES R., Assistant Professor of Embryology and Comparative
Anatomy, Cornell Medical School.

STRONG, OLIVER S., Instructor in Anatomy, Columbia University.
WILDMAN, EDWARD E., Central High School, Philadelphia, Pa.
WILSON, E. B., Professor of Zoölogy, Columbia University.
WOODRUFF, L. L., Assistant Professor of Biology, Yale University.
YERKES, ROBERT M., Professor of Comparative Psychology, Harvard University.

2. PHYSIOLOGY

BRADLEY, HAROLD C., Assistant Professor of Physiological Chemistry, University of Wisconsin.
BUNZEL, H. H., University of Chicago.
KNOWLTON, FRANK P., Professor of Physiology, Syracuse University.
LILLIE, R. S., Instructor in Physiological Zoölogy, University of Pennsylvania.
MATHEWS, ALBERT P., Professor of Physiological Chemistry, University of Chicago.
NEWMAN, H. H., Professor of Zoölogy, University of Texas.
PIKE, FRANK H., Instructor in Physiology, University of Chicago.

3. BOTANY

KRAEMER, HENRY, Professor of Botany and Pharmacognosy, Philadelphia College of Pharmacy.
LYMAN, GEORGE R., Assistant Professor of Botany, Dartmouth College.
MOORE, GEORGE T., Professor of Plant Physiology and Applied Botany, Washington University, St. Louis.
THOMAS, MASON B., Professor of Botany, Wabash College.

OCCUPYING TABLES

1. ZOOLOGY

BOONE, W. D., University of Missouri.
BRAGG, LUTHER C., Assistant Entomologist, Agricultural College, Fort Collins, Colo.
BROWNE, ETHEL N., Instructor in Mathematics and Science, Bennett School, Millbrook, New York.
CARTER, J. L., University of Missouri.
CHIDESTER, FLOYD E., Instructor in Biology, DePauw University.
EDWARDS, DAYTON J., Tutor in Natural History, College of the City of New York.
GRAVE, B. H., Associate Professor of Zoölogy, Earlham College, Richmond, Indiana.
HARVEY, E. NEWTON, Columbia University.
LINTON, ELEANOR A., Smith College.
MCKIBBEN, PAUL S., University of Chicago.
SHOREY, MARIAN L., Professor of Biology, Milwaukee-Downer College.
THOMPSON, CRYSTAL, University of Michigan.
SPOONER, GEORGINA B., Columbia University.
WALLACE, EDITH M., Instructor in Zoölogy, University of Maine.

2. PHYSIOLOGY

HUGHES, WINONA A., Instructor in Chemistry, Mount Holyoke College.
TINKHAM, FLORENCE L., 56 Temple Street, Springfield, Mass.

STUDENTS

1909

INVERTEBRATE ZOÖLOGY

1. ABBOTT, MARGARET B., 413 W. Front Street, Plainfield, Mass.
2. ANDERSON, SARAH R., Readville, Mass., c/o A. L. Rotch.
3. BAYER, M. ELIZABETH, Woman's College, Baltimore.
4. BELT, MABEL, Woman's College, Baltimore.
5. BRYAN, MARY M., Teacher, Mary Institute, St. Louis, Mo.
6. CLARKE, HELEN DOROTHY, 1 Autumn St., Fenway, Boston, Mass.
7. FARMER, CHESTER J., Teaching Fellow in Biological Chemistry, Harvard Medical School.
8. FARNHAM, CHARLOTTE, Instructor in Biology, High School, Poughkeepsie.
9. FORBES, W. T. M., Fellow, Clark University.
10. FRANKLIN, GEORGE DWIGHT, Assistant in Zoölogy, American Museum of Natural History.
11. GANNETT, CHARLOTTE K., Vassar College.
12. GANNETT, LEWIS STILES, University of Rochester.
13. GILMORE, RALPH J., Instructor, Lehigh University.
14. GOLDBERGER, JOSEPH, Assistant Surgeon, Hygienic Laboratory, Washington.
15. ISELEY, F. B., Instructor in Biology, University of Oklahoma.
16. JUST, ERNEST E., Instructor, Howard University.
17. LEAVITT, GEORGE C., University of Maine.
18. LEONARD, HELEN A., Vassar College.
19. NICHOLSON, MARY, Western College, Oxford, Ohio.
20. OBER, MARION K., High School, Katonah, N. Y.
21. OGDEN, HAROLD B., Instructor, Park College, Parkville, Mo.
22. OSBORNE, FRANK J., University of Rochester.
23. MELLEN, IDA M., Brooklyn, New York.
24. PETTIBONE, C. J. V., Research Assistant Biological Chemistry, Harvard Medical School.
25. PRENTISS, HENRIETTA, Instructor in Zoölogy, Normal College, New York City.
26. REDELINGS, LESLIE H., Northwestern University.
27. REID, CHARLES D. JR., Johns Hopkins Medical School.
28. ROOT, FRANCIS M., Oberlin College.
29. RUSSO, ADA, Laboratory Assistant, Oberlin College.
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35. WATTERS, FLORENCE A., Smith College.
36. WRIGHT, ALBERT H., Instructor in Zoölogy, Cornell University.

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7. HOWLAND, RUTH B., Sweet Briar College, Va.
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11. SMITH, BERTRAM G., Instructor in Zoölogy, University of Wisconsin.
12. TOMPKINS, ELIZABETH M., White Plains High School, New York.

PHYSIOLOGY

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2. HAYES, CHARLES H., Professor of Christian Apologetics, General Theological Seminary, New York City.
3. HAYES, SAMUEL P., Professor of Psychology, Mount Holyoke College.
4. IVES, JUDSON D., Instructor in Biology, Wake Forest College, N. C.
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7. SEELEY, LOUISE H., Jersey City High School, N. J.
8. STEWART, FRANCES E., 414 N. Normal Park Way, Chicago, Ill.

BOTANY

1. HESLER, LEX R., Wabash College.
2. JENNISON, HARRY M., Massachusetts Agricultural College, Amherst.
3. PAIGE, BERYL H., Mount Holyoke College.
4. SCHOONOVER, ELIZABETH H., Smith College.
5. SPALDING, CAROLINE, Wellesley College.
6. TAYLOR, ARTHUR W., Teacher, Salem, Mass.

TABULAR VIEW OF ATTENDANCE

	1907	1908	1909
INVESTIGATORS—Total	60	52	66
Occupying Rooms			
Zoölogy	32	32	39
Physiology	8	6	7
Botany	10	8	4
Occupying Tables			
Zoölogy	9	6	14
Physiology	1		2
STUDENTS—Total	47	48	63
Zoölogy	34	19	36
Embryology		15	12
Physiology	4	3	9
Botany	9	11	6
UNIVERSITIES AND COLLEGES REPRESENTED.	47	51	47
Investigators	26	25	27
Students	21	26	20
SCHOOLS REPRESENTED	13	5	14
Investigators	4	2	3
Students	9	3	11

SUBSCRIBING INSTITUTIONS, 1909

ACADEMY OF NATURAL SCIENCES, PHILADELPHIA.

MOUNT HOLYOKE COLLEGE.

ROCHESTER UNIVERSITY.

SMITH COLLEGE.

UNIVERSITY OF CHICAGO.

COLUMBIA UNIVERSITY.

UNIVERSITY OF PENNSYLVANIA.

VASSAR COLLEGE.

UNIVERSITY OF MICHIGAN.

WELLESLEY COLLEGE.

UNIVERSITY OF MISSOURI.

WISTAR INSTITUTE OF ANATOMY AND BIOLOGY.

WOMAN'S COLLEGE OF BALTIMORE.

YALE UNIVERSITY.

PRINCETON UNIVERSITY.

VASSAR BROTHERS' INSTITUTE.

NORTHWESTERN UNIVERSITY.

OBERLIN COLLEGE.

UNIVERSITY OF KANSAS WOMAN'S TABLE SUPPORTED BY MRS.
ROBINSON.

LUCRETIA CROCKER SCHOLARSHIP, BOSTON PUBLIC SCHOOLS.

EVENING LECTURES, 1909

- T. H. MORGAN.....“ Mendelian Inheritance of Coat and
Eye Color in Mice ” July 6.
- A. P. MATHEWS.....“ The Mechanism of Some Proto-
plasmic Combustions ” July 9.
- ROSS G. HARRISON.....“ Protoplasmic Movement as a Fac-
tor in the Development of the
Nervous System ” July 13.
- C. B. DAVENPORT.....“ Variation in Dominance ” July 16.
- HENRY KRAEMER.....“ Experiments on the Modification
of Color in Plants ”..... July 23.
- T. H. MONTGOMERY, JR...“ Architectural Habits of Spiders ” July 27.
- W. L. TOWER.....“ The Role of External Factors in
Variation and Heredity ” July 29.
- H. H. NEWMAN.....“ A Unique Form of Reproduction
in the Nine-banded Armadillo ” July 30.
- M. M. METCALF.....“ The Protozoan Nucleus ” Aug. 6.
- C. H. EIGENMANN.....“ An Expedition to British Guiana
and the Kaieteur ” Aug. 9.
- G. H. PARKER.....“ Sponge Reactions and the Origin
of the Nervous System ” Aug. 11.

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